

What is claimed is:

1. A radiation image read-out method,
comprising the steps of:

5 i) irradiating stimulating rays, which have
been produced by a line light source, linearly along a main
scanning direction and onto a stimuable phosphor sheet,
on which a radiation image has been stored, the stimulating
rays causing the stimuable phosphor sheet to emit light
in proportion to an amount of energy stored on the stimuable
10 phosphor sheet during exposure of the stimuable phosphor
sheet to radiation,

ii) receiving light, which is emitted from the
linear area of the stimuable phosphor sheet exposed to
the linear stimulating rays, with a line sensor comprising
15 a plurality of photoelectric conversion devices arrayed
along the main scanning direction, the received light being
subjected to photoelectric conversion performed by the line
sensor,

iii) moving the stimuable phosphor sheet with
20 respect to the line light source and the line sensor and
in a sub-scanning direction different from the main scanning
direction, and

iv) successively acquiring output signal
components from the photoelectric conversion devices of
25 the line sensor in accordance with the movement, whereby

an operation for reading out the radiation image from the stimuable phosphor sheet is performed,

wherein the improvement comprises the provision of the steps of:

- 5 a) previously storing reference signal components having been obtained in an initial state from the outputs of the photoelectric conversion devices of the line sensor, which has received reference light produced by a reference light source,
- 10 b) causing the line sensor to receive the reference light, which is produced by the reference light source, at a stage immediately before the operation for reading out the radiation image from the stimuable phosphor sheet is performed,
- 15 c) acquiring sensitivity signal components from the outputs of the photoelectric conversion devices of the line sensor having received the reference light, which is produced by the reference light source, at the stage immediately before the operation for reading out the radiation image from the stimuable phosphor sheet is performed,
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- 25 d) comparing the sensitivity signal components and the corresponding reference signal components with each other, sensitivity correction signal components for making a correction for variations in sensitivity among the

photoelectric conversion devices of the line sensor being
obtained from the comparison, and

5 e) making a correction of the output signal
components, which are acquired from the photoelectric
conversion devices of the line sensor at the time of the
operation for reading out the radiation image from the
stimulable phosphor sheet, by use of the sensitivity
correction signal components.

10 2. A method as defined in Claim 1 wherein the
sensitivity correction signal components are subjected to
low frequency component removing processing, and

the correction of the output signal components,
which are acquired from the photoelectric conversion devices
of the line sensor at the time of the operation for reading
15 out the radiation image from the stimulable phosphor sheet,
is made by use of the sensitivity correction signal
components, which have been subjected to the low frequency
component removing processing.

20 3. A method as defined in Claim 1 wherein the
stimulable phosphor sheet contains a stimulable phosphor,
which is capable of absorbing light having wavelengths
falling within a ultraviolet to visible region and thereby
storing energy of the light having wavelengths falling
within the ultraviolet to visible region, and which is
25 capable of being stimulated by light having wavelengths

falling within a visible to infrared region and thereby radiating out the stored energy as emitted light.

4. A method as defined in Claim 2 wherein the stimuable phosphor sheet contains a stimuable phosphor, which is capable of absorbing light having wavelengths falling within a ultraviolet to visible region and thereby storing energy of the light having wavelengths falling within the ultraviolet to visible region, and which is capable of being stimulated by light having wavelengths falling within a visible to infrared region and thereby radiating out the stored energy as emitted light.

5. A radiation image read-out apparatus, comprising:

i) a line light source for irradiating stimulating rays linearly along a main scanning direction and onto a stimuable phosphor sheet, on which a radiation image has been stored, the stimulating rays causing the stimuable phosphor sheet to emit light in proportion to an amount of energy stored on the stimuable phosphor sheet during exposure of the stimuable phosphor sheet to radiation,

ii) a line sensor for receiving light, which is emitted from the linear area of the stimuable phosphor sheet exposed to the linear stimulating rays, and performing photoelectric conversion of the received light, the line

sensor comprising a plurality of photoelectric conversion devices arrayed along the main scanning direction,

5 iii) sub-scanning means for moving the stimuable phosphor sheet with respect to the line light source and the line sensor and in a sub-scanning direction different from the main scanning direction, and

10 iv) read-out means for successively acquiring output signal components from the photoelectric conversion devices of the line sensor in accordance with the movement, and thereby performing an operation for reading out the radiation image from the stimuable phosphor sheet,

 wherein the improvement comprises the provision of:

15 a) a reference light source for projecting reference light onto the line sensor,

20 b) sensitivity signal component acquiring means for acquiring sensitivity signal components from the outputs of the photoelectric conversion devices of the line sensor having received the reference light, which is produced by the reference light source,

 c) reference signal component storing means for storing the sensitivity signal components, which have been acquired in an initial state by the sensitivity signal component acquiring means, as reference signal components,

25 d) correction signal component calculating

means for comparing sensitivity signal components, which have been acquired by the sensitivity signal component acquiring means at a stage immediately before the operation for reading out the radiation image from the stimuable phosphor sheet is performed, and the corresponding reference signal components, which have been stored in the reference signal component storing means, with each other in order to obtain sensitivity correction signal components for making a correction for variations in sensitivity among the photoelectric conversion devices of the line sensor, and

e) correction means for making a correction of the output signal components, which are acquired from the photoelectric conversion devices of the line sensor at the time of the operation for reading out the radiation image from the stimuable phosphor sheet, by use of the sensitivity correction signal components.

6. An apparatus as defined in Claim 5 wherein the sensitivity correction signal components are subjected to low spatial frequency component removing processing, and

the correction means makes the correction of the output signal components, which are acquired from the photoelectric conversion devices of the line sensor at the time of the operation for reading out the radiation image

from the stimuable phosphor sheet, by use of the sensitivity correction signal components, which have been subjected to the low spatial frequency component removing processing.

5 7. An apparatus as defined in Claim 5 wherein the stimuable phosphor sheet contains a stimuable phosphor, which is capable of absorbing light having wavelengths falling within a ultraviolet to visible region and thereby storing energy of the light having wavelengths falling within the ultraviolet to visible region, and which is
10 capable of being stimulated by light having wavelengths falling within a visible to infrared region and thereby radiating out the stored energy as emitted light.

15 8. An apparatus as defined in Claim 6 wherein the stimuable phosphor sheet contains a stimuable phosphor, which is capable of absorbing light having wavelengths falling within a ultraviolet to visible region and thereby storing energy of the light having wavelengths falling within the ultraviolet to visible region, and which is
20 capable of being stimulated by light having wavelengths falling within a visible to infrared region and thereby radiating out the stored energy as emitted light.